



GULF STATES UTILITIES COMPANY

RIVER BEND STATION POST OFFICE BOX 220 ST. FRANCISVILLE LOUISIANA 70776
AREA CODE 804 656-8096 346-8751

January 18, 1988
RBC- 27301
File Nos. G9.5, G9.25.1.2

Mr. Robert D. Martin, Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458

On November 16, 1987 Gulf States Utilities Company (GSU) submitted to the NRC a report of a defect pursuant to 10CFR21. The defect involved the failure of a rotor winding on a Transamerica DeLaval (presently IMO DeLaval)/NEI Peebles-Electric Products diesel generator installed at River Bend Station (RBS) - Unit 1. In the initial report GSU committed to supply additional information concerning the cause of the failure and any additional corrective action to be taken by GSU. The Attachment to this letter provides this information and completes GSU's submittal to the NRC concerning this subject.

Sincerely,

C. C. Deddens
Senior Vice President
River Bend Nuclear Group

JCD/JEM/BJK/JRH/BCF/DNL/ch

Attachment

cc: Office of Nuclear Regulatory Regulation
U.S. Nuclear Regulatory Commission, Region IV
Washington, DC 20555

NRC Resident Inspector
P.O. Box 1051
St. Francisville, LA 70775

B/2

Mr. Kon B. Politi
NEI Peebles-Electric Products, Inc.
17045 Euclid Avenue
Cleveland, OH 44112

Mr. Alan Barich
IMO Delaval, Inc.
P.O. Box 2161
Oakland, CA 94621

ATTACHMENT

Gulf States Utilities Company
River Bend Station - Unit 1

Supplemental Report of a Defect Per 10CFR21
Standby Diesel Generator Rotor Winding

This report provides the results of GSU's investigation of the Diesel Generator rotor pole failure at River Bend Station. The GSU Engineering Department was assisted in this evaluation by Southwest Research Institute (SWRI). The results of SWRI's examination of sections of the failed pole do not identify a single root cause of the failure. The most probable cause of the failure is a combination of the following:

1. Inadequate attention to resin storage conditions and its shelf life
2. Resin application errors
3. Contamination during application

It is impossible to determine the exact date the rotor pole failed because no abnormal conditions were observed during periodic testing. Because the exact date of failure of the rotor pole is not known, an initial visual inspection and electrical test program was developed and performed to baseline the integrity of the remaining rotor poles. The visual inspection of the rotor pole surface assures early detection of a resin failure prior to rotor pole winding separation. The electrical test program assures that each rotor pole is electrically sound, that there is no internal deterioration of the pole, and that the rotor assembly is capable of meeting its original design requirements. The electrical test program consists of the following:

1. Megger and Polarization Index
2. Static Pole Balance
3. Rolling Impedance
4. High Potential Test (IEGS*EGIB only)

The megger and polarization index tests verify the acceptability of the electrical insulation to ground. The static pole balance test detects internal turn to turn shorts within each rotor pole. The rolling impedance test verifies the results of the static pole balance by measuring the impedance of the rotor assembly when the rotor is subjected to the centrifugal forces generated during operation of the diesel generator and comparing this value to the standstill impedance. The high potential test assures that the electrical insulation in the rotor poles is acceptable.

These tests and inspections (except the high potential test) were performed on IEGS*EG1B prior to the post maintenance test run and subsequent 18 month surveillance testing of this diesel generator. A visual inspection, megger, polarization index and high potential test were also performed after completion of the 18 month surveillances for IEGS*EG1B. The running time between inspections was approximately 60 hours. The visual inspection, megger, polarization index, static pole balance and rolling impedance test were also performed on IEGS*EG1A. No unsatisfactory conditions were noted during these activities. These acceptable inspection and test results were used to establish the reinspection frequency for the continuing surveillance program.

The continuing surveillance program is as follows:

- A) IEGS*EG1A & B - perform visual inspection of the rotor poles every six months or 30 hours of operation, whichever comes first.
- B) IEGS*EG1A & B - perform megger, polarization index, pole balance and rolling impedance test every refueling outage.
- C) Perform visual inspection, megger, polarization index, static pole balance and rolling impedance test immediately after an overspeed trip of the diesel generator.

This program may be modified to reduce surveillances at a future date based on acceptable inspection and test results.

GSU has also received an evaluation of this failure from the equipment vendor, NEI Peebles - Electric Products, Inc. GSU has reviewed the vendor evaluation and does not concur with it. The NEI evaluation states that the most probable cause of the rotor pole failure was either out of phase synchronization of the diesel generator to the grid or a sudden fault. GSU has reviewed site documentation and Special Reports to the NRC regarding valid and invalid diesel generator failures. This review found that no out of phase synchronization or sudden fault event has occurred at RBS.

-10-401-

E.M.
Minneapolis
↔

Palo Verde INSPECTION Palo Verde 18 month.
Unit 1986

Palo Verde. Palo Verde diesel generator engine failure.

River Bend inspection 18 month outage.

WPSS AC Pole drop test.

Synch check Relay — W

Have to be at a certain angle before you close the CB.

B/16

RBC-36462
G6.3.2
G9.25.1.2

TELOG

PERSON: CALLED OR CALLING BILL McNEILL DATE: 11/12/87 TIME: 8:45 AM

COMPANY: U.S. NRC-Region 4 ARLINGTON TX (817) 860-8100
Name Location Telephone no.

SUBJECT(S) DISCUSSED: 10 CFR 21 TELEPHONE NOTIFICATION
OF DEFECT IN STANDBY DIESEL GENERATOR
ROTOR WINDING. ROTOR WINDING SEPARATED
FROM SHAFT POLE WASHER. WIRE HAD DELAMINATED,
POSSIBLY DUE TO
DETERIORATION OF EPXY RESIN. DEFECT FOUND
IN ONE POLE. NO OTHER DEFECTS IN ANY
OTHER POLE WINDINGS. ELECTRICAL TEST
FOUND NO ELECTRICAL FAULT. ACTION IS TO
REWIND THE EFFECTED POLE. ROOT CAUSE

COMMENTS: EVALUATION IS IN PROCESS. EVENT IS
SIMILAR TO PALO VERDE. CONDITION INITIALLY
FOUND ON OCT 27. DETERMINED TO BE REPEATABLE
ON NOV 11. WRITTEN NOTIFICATION WILL FOLLOW.

ACTION ITEMS: BILL McNEILL ASKED WHY THE PALO
VERDE EVENT WAS DETERMINED/REPORTED TO
ONLY AFFECT HIGHER SPEED UNITS AND
NOT 450 RPM UNITS. HE ALSO ASKED FOR
THE MANUFACTURE OF THE THIRD GENERATOR.

OTHERS NOTIFIED: R. KING, F. GRANT, J. BOOKER, J. HAMILTON
B. FICHTENKORT, T. PLUNKETT, J. DEDDENS, NDC

SIGNATURE David Lorfing B/1
DAVID LORFING

RECORD OF TELEPHONE CONVERSATION

June 2, 1990

Person Calling: Mr. Jim Richards
Morton Chemical Division
Morton International
815-338-1800

Person Called: Don Kidder

Reference: Letter of June 29, 1990, Don Kidder to Jim Richards

1. Jim stated that he had examined the two pieces of wire from the DG-1 rotor windings and found the following:

Failed wire section:

Under a 50X microscope - the insulation was starved of adhesive (Resin) with numerous air gaps. There was just enough adhesive to hold the glass together, not nearly enough to establish the required insulating qualities.

The unfailed section (same pole) was completely encapsulated and would carry a heavy, high voltage.

2. In his opinion, the condition noted was the result of just not applying enough adhesive during fabrication.
3. He stated his spec states A701 should be cured at 400°F for one hour. I told him that that would exceed the spec for the micarda end washers. He said that 350° for a long enough time would be adequate. I told him we were holding it for about 10 hours after temperature was achieved. He said, "I would half that if I were you."
4. He stated he would send a letter with photographs as soon as possible.

DRK/pg

B/3

WNP-2 DIVISION I EMERGENCY GENERATOR
REQUEST FOR WAIVER OF COMPLIANCE (WOC)

REVIEW OF DRAFT - OBSERVATIONS AND QUESTIONS NOT ADDRESSED

1. WHY DOES THIS EFFORT NEED TO BE DONE BEFORE THE DIVISION II GENERATOR IS RESTORED?
2. HAS BRINGING IN A TEMPORARY GENERATOR BEEN CONSIDERED?
3. WHAT IS THE MAXIMUM TIME THE DIV. I GENERATOR WILL BE OUT OF SERVICE?
4. BETWEEN WHAT TWO CALENDAR DATES WOULD THE DIV. I GENERATOR WORK BE DONE?
5. HAVE THEY CONSIDERED LOSS OF LIGHTING AND VENTILATION DURING A LOSS OF OFF-SITE POWER, WHICH WOULD COMPLICATE RESTORING THE DIV. I GENERATOR?
6. HAS THE PLANT OPERATIONS COMMITTEE (POC) REVIEWED AND APPROVED THE WOC?
7. THEY STATE THEY WILL "...CAREFULLY CONTROLL... .. MAINTENANCE AND SURVEILLANCE...". WHAT DO THEY MEAN BY THAT STATEMENT?
8. WHAT MAKES THE HPICIS GENERATOR MORE DEPENDABLE THAN THE DIV. II GENERATOR? WHY DOES THE HPICIS GENERATOR NOT HAVE THE SAME POTENTIAL PROBLEMS?

PROBLEMS WHICH WE ARE WORKING ON OR NEED TO WORK ON

1. WHAT SHOULD BE DONE IF THE SAME PROBLEM (POLE WINDING SHORTING AND/OR MISSING SPACERS IN THE STATOR) IS FOUND IN THE DIV. I GENERATOR?
2. DOES POLE WINDING SHORTING AND/OR MISSING SPACERS MAKE THE GENERATOR INFERABLE?
3. DO THESE TYPE OF PROBLEMS LEAD THEMSELVES TO CATASTROPHIC FAILURES?
4. CAN INCIPIENT FAILURES BE DETECTED IN SOME MANNER?
5. SHOULD THE LICENSEE PROCEED WITH THEIR MONTHLY SURVEILLANCE TEST ON 6/27?

ADDITIONAL INFORMATION

1. THE STATION BATTERIES ARE REQUIRED TO SUPPLY POWER FOR TWO HOURS FOLLOWING A DESIGN BASIS EVENT.
2. CORE COOLING CAN BE SUPPLIED FOR AT LEAST A DAY BY THE HPICIS FOLLOWING A TOTAL LOSS OF OFF-SITE POWER, BUT STATION BATTERIES ARE NEEDED FOR INSTRUMENTS AND CONTROLS.
3. THE HPICIS GENERATOR BEARINGS HAVE A DIFFERENT DESIGN THAN THE DIV. I&II GENERATORS. THE ELECTRICAL ASPECTS HAVE NOT BEEN DISCUSSED.
4. DYLE ACHER AND MYSELF ARE RESEARCHING THE PROPOSED EXAMINATIONS, TALKING WITH THE RESIDENTS AND THE LICENSEE PERSONNEL.
5. THE ELECTRICAL PROBLEMS WITH THE DIV. II GENERATOR ARE (FIRST); SHORTING IN TWO OF EIGHT POLE PIECES, THE CAUSE OF WHICH IS NOT CLEAR BUT IS MOST LIKELY DUE TO MECHANICAL SHOCK TO THE ROTOR, AND (SECOND) MISSING SPACERS IN THE STATOR WINDINGS, WHICH DID NOT CAUSE ANY APPARENT PROBLEM OR FAULT.
6. THE WOC WILL PROBABLY BE SIGNED OUT BY PLANT MANAGEMENT THIS AFTERNOON AFTER 1 PM OUR TIME.
7. BOB SAMWORTH WANTS TO WAIT UNTIL WE GET THE LICENSEE'S LETTER BEFORE ASKING THE QUESTIONS WE HAVE DEVELOPED. WE DID POINT OUT TO THEM THAT THEY NEEDED TO ADDRESS THE POC APPROVING THE LETTER.

PJM 6/26/90 1745

B/5

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 966 • 3000 George Washington Way • Richland, Washington 99352

NUCLEAR PLANT NO. 2

TELECOPY TRANSMITTAL SHEET

Fax 415-943-3755

TO: Phil Morrill	TELEPHONE: 415-943-3745
CO: NRC	LOCATION: Walnut Creek
FROM: Roy Matthews	EXT.: (509)-377-2397
NAME OF DOCUMENT/SUBJECT: DG-1 Generator	
DATE/TIME: 6/27/90	TOTAL NO. OF PAGES: 7

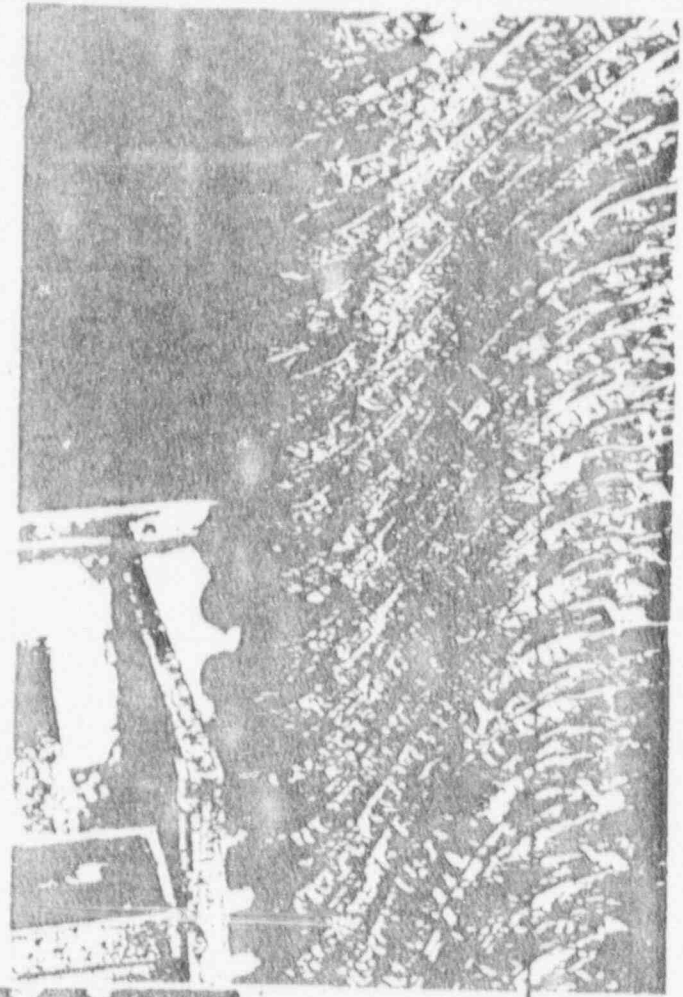
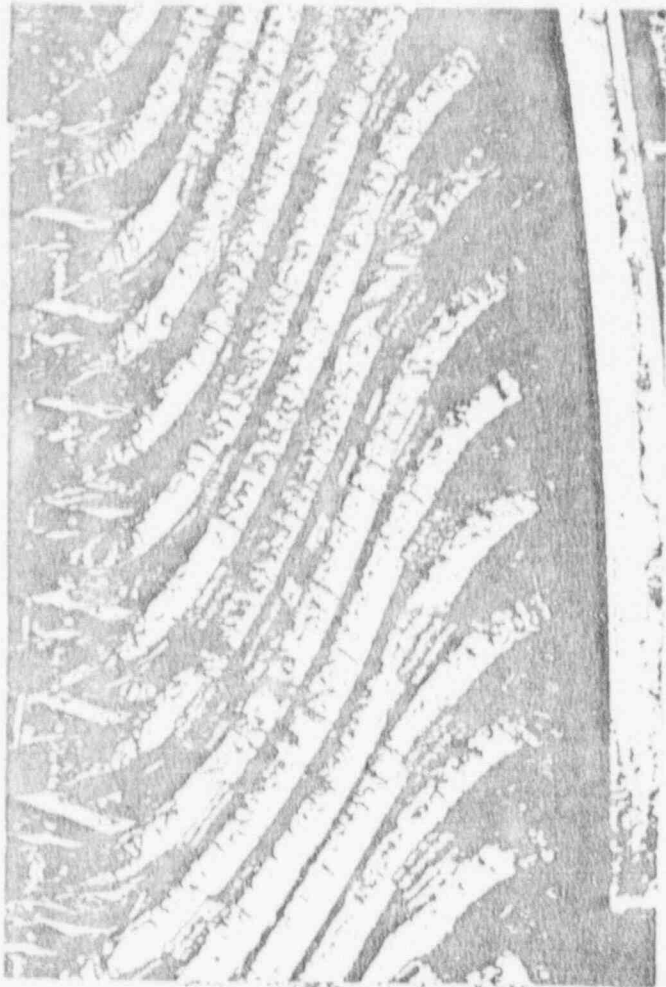
1545

Hope you can read these!

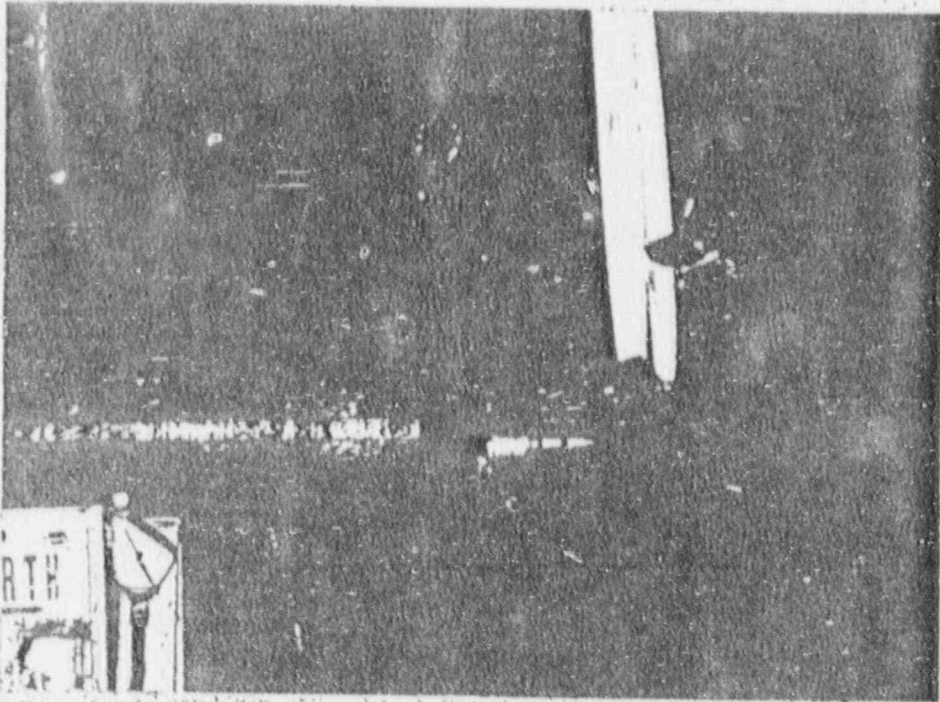
WE ARE TRANSMITTING FROM:

NEFAX-4500 SYSTEMS III-T - (509) 377-2032

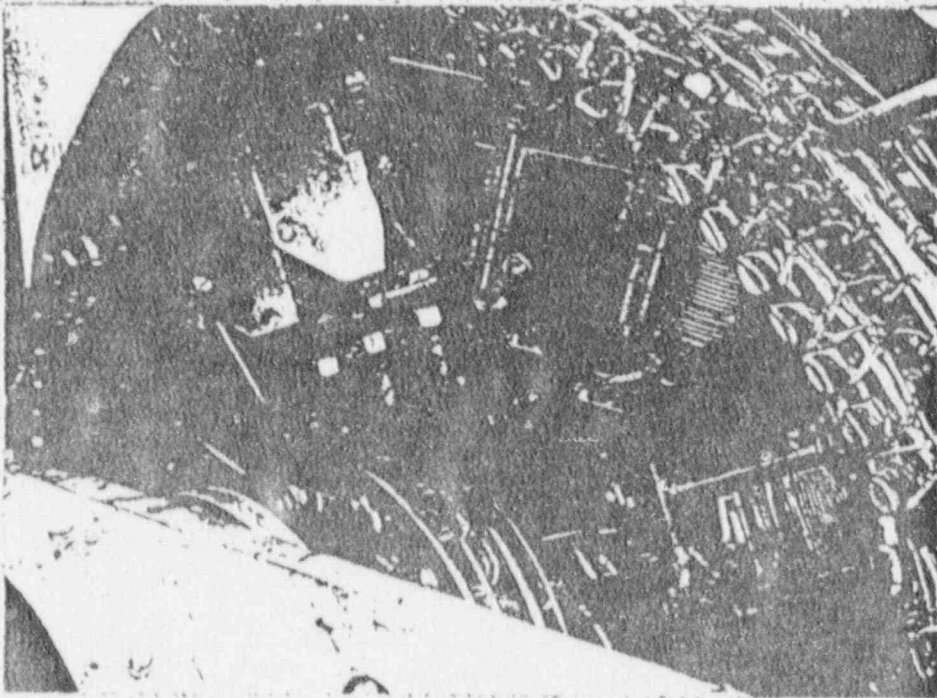
B/L



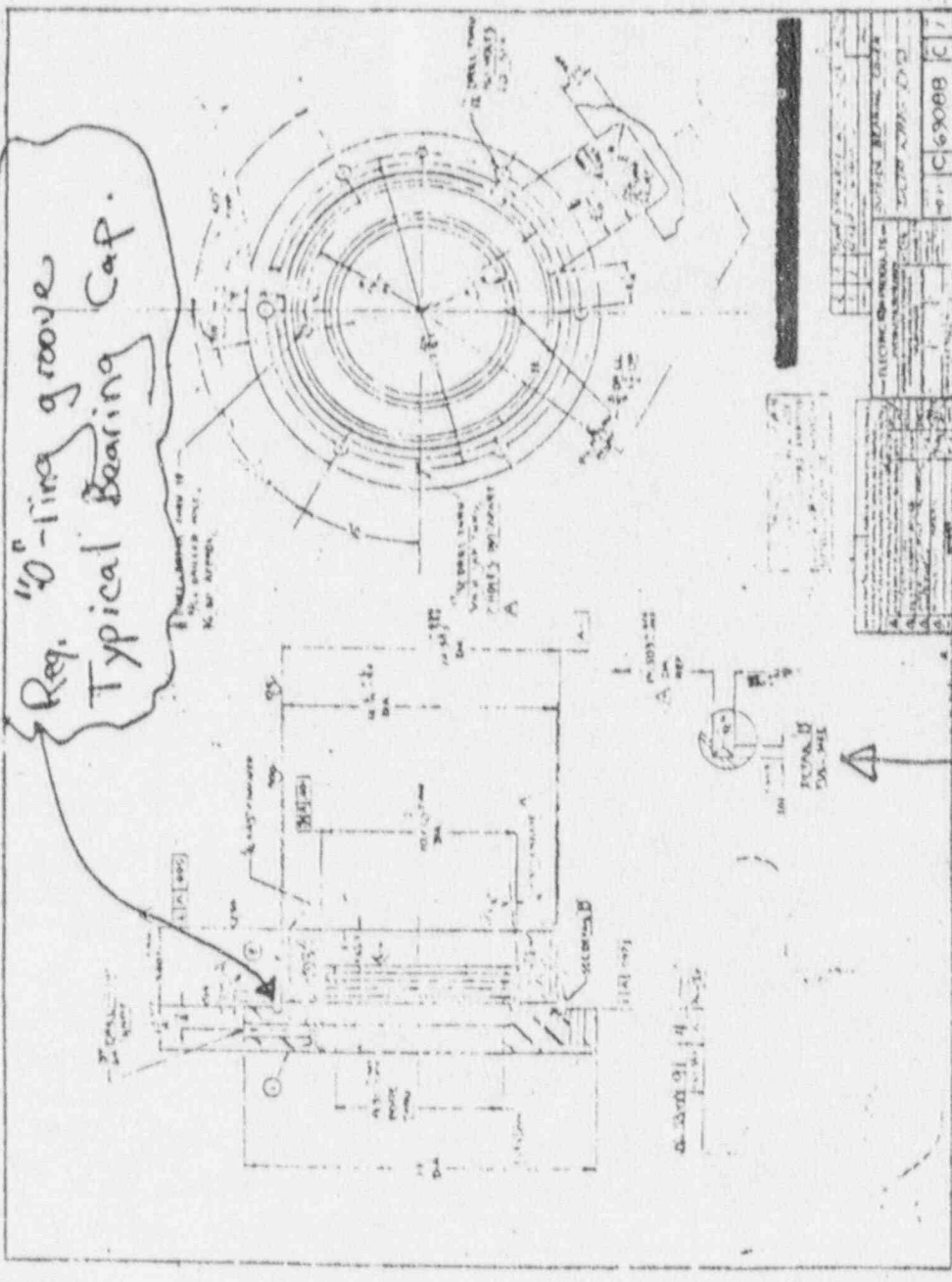
Stator winding
 movement, opened
 up here. adjacent
 coils are touching.



Rotor
during
removal



Rotor
Slip Ring
Eng.



"D" ring groove detail



WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INTEROFFICE MEMORANDUM

DATE: June 27, 1990
TO: Distribution
FROM: *W. D. Shaeffer*
W. D. Shaeffer, Mgr., Work Control Group (994E)
SUBJECT: DIV. II EMERGENCY DIESEL GENERATOR INSPECTION

WDS/lb

REFERENCE:

On Friday, June 29th at 0600, DG #2 will be removed from service for electrical testing of the generator rotor and field measurements of the generator oil level sightglass markings. As part of the waiver that has been requested from the NRC, we have committed to ensure that ongoing "work in progress" does not challenge our backup or normal power sources or affect our ability to control reactor temperature during the inspection.

To this end, the Work Control Group has reviewed all in-progress work and newly scheduled work for Friday and will not schedule any MWRs, surveillances or PMs with a potential for challenging a) Offsite power sources, b) In-plant A/C electrical systems, c) Secondary containment integrity, d) shutdown cooling systems, and e) Spent Fuel Pool cooling systems.

Also, no core alterations, handling of irradiated fuel, crane operations over the Spent Fuel Pool, or activities which could drain the reactor vessel will be allowed.

We would request help from the Shop Work Control Supervisors/Craft Supervisors and the on-duty Shift Managers to assist us in this effort. Please refer any comments, questions or concerns to myself (X-2370) or any of the Work Control Coordinators (X-2405).

rh

Distribution:

TW Albert (927I)
DS Feldman (927L)
GL Gelhaus (988U)
SP Grundhauser (927I)
JD Harmon (927S)
RL Koenig (988U)
SL McKay (927O)
RA Morris (927E)

CM Powers (927M)
DB Thiederman (927L)
JR Trobaugh (927E)
RL Webring (927S)
Shift Managers (6)
Control Room Supervisors (6)
Work Control Coordinators (6)

B/7



WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INFORMATION ONLY

PROBLEM EVALUATION REQUEST

PTL NO.

PPM 1.3.12

PER NO.

290-533

PLANT PROBLEM DESCRIPTION

ORIGINATOR

While conducting a Pole Voltage drop test on DG-2 field windings, an imbalance was found between opposing field poles #2 + #6. This condition could be the result of shorted turns in the field windings (Data attached)

TECH. SPEC./PROCEDURE/REGULATION ETC.

3.8.1.1

CONTINUATION SHEETS

YES NO

ORIGINATOR NAME (PRINT)

S.E. Willman

MEL EPN

CONTINUATION SHEET

YES NO

ORIGINATOR SIGNATURE/DATE

S.E. Willman 6-29-90

MEL SYSTEM NO.

047

MEL MANUFACTURER CODE

E 147

VALIDATION SIGNATURE/DATE

J.W. Mays 6-29-90

SHIFT MANAGER

DISCOVERY DATE/TIME

6-29-90 / 1430

EVENT DATE/TIME

6-29-90 / 1430

PLANT MODE

4

% POWER

0

- NON REPORTABLE
 POTENTIALLY REPORTABLE
 REPORTABLE

REQUIREMENT 10CFR
OTHER

POC IMM. DISPOSITION YES
APPROVAL REQUEST NO

TECH. SPEC. VIOLATION YES NO

VITAL MWR YES NO

SHIFT MGR/DATE

Kal 6.29.90

LCO ENTERED YES NO

VITAL MWR NO.

COMMENTS

MANAGEMENT REVIEW COMMITTEE

PROBLEM RESOLUTION METHOD

- MCR MWR PDF ROR NONE REQUIRED CLOSE PER
 PDR TER PRF ISCR PTL ENTRY
 MDR RFTS KOM SCN OTHER (LIST)

RESPONSIBLE DEPARTMENT/ORGANIZATION

INDUSTRIAL SAFETY/RISK ASSESSMENT REQUIRED YES NO

ACTION DUE DATE

PLANT MGR SIGNATURE/DATE

RXSU REVIEW REQUIRED YES NO

DEPUTY REVIEW SIGNATURE/DATE

IMPLEMENTING DOC. NO. OR PTL NO.

B/S

PER CLOSURE DATE

INFORMATION ONLY

MWR NO. AS8205

MAINTENANCE WORK REQUEST (CONTINUATION SHEET)

PAGE 11 of 11

13. Bar the engine over until the next pole is aligned in the same position as the previous pole. This is the position established in step 8.

Adrian 6/29/90

14. Repeat steps 10 thru 13 until all the pole voltages have been measured.

	voltage	crankshaft degrees (west side of south Eng.)
Pole 1	<u>59.9</u>	<u>300°</u>
Pole 2	<u>84.1</u>	<u>5°</u>
Pole 3	<u>58.8</u>	<u>50°</u>
Pole 4	<u>60.1</u>	<u>95°</u>
Pole 5	<u>60.0</u>	<u>140°</u>
Pole 6	<u>36.0</u>	<u>185°</u>
Pole 7	<u>60.8</u>	<u>230°</u>
Pole 8	<u>59.6</u>	<u>275°</u>

VOM ID# 41077
CAL due date 10-5-90
(120 VOLT)

VOM ID# 11755
CAL due date (10-5-90)
(POLE READINGS)

Adrian 6/29/90

15. NDE TO perform a Bore scope inspection of the generator stator and record on video tape.

Adrian 6-29-90

16. Terminate the the field leads within the regulator cabinet I.A.W. PPM 1.3.9 determ/reterm sheet.

Adrian 6/29/90

16. Replace the lower access cover inspection hole covers.

Adrian N/A 6/29/90

QTY USED	SPARE PARTS/MATERIAL			
	MATERIAL CODE	NO. USED	MATERIAL CODE	NO. USED

INFORMATION ONLY

AS6205

	voltage	crankshaft degree
Pole 1	N/A	---
Pole 2	N/A	---
Pole 3	N/A	---
Pole 4	36.0	320°
Pole 5	36.14	200
top Pole 6	36.1	185°
Pole 7	36.17	170
Pole 8	N/A	---

crankshaft degree (west side, south engine side)
 METXR NO. 1
 11754 Due 11-11-90
 (180 VOLT SUPPLY)
 METXR #2
 41077 Due 11-5-90
 (POLE READINGS)

15. Terminate the field leads within the regulator cabinet IAW. PPT4
 1.3.9 determ/reterm sheet.

[Signature] 6/29/90

16&17. Delete IAW

[Signature] 6/29/90

Note
 If the lockwashers being re-installed are flat or deformed replace them with new washers

18. Replace the inner housing access covers. Tighten the bolts until the lock washers are flattened. Do not over tighten the bolt.



WASHINGTON PUBLIC POWER SUPPLY SYSTEM

INFORMATION ONLY

PLANT PROBLEM REPORT

POC IMMEDIATE DISPOSITION APPROVAL REQUEST

PER NCR/MDR/PDR (CIRCLE ONE)

NO. 290-533

PTL NO. _____

PPM 1.3.15

PAGE _____ OF _____

IMMEDIATE DISPOSITION

USE AS IS *

REPAIR *

ASME

OTHER (SPECIFY)

CONDITIONAL RELEASE *

HOLD TAGS

VITAL MWR YES NO

NO. _____

NO. _____

NO. _____

SEE ATTACHED JCO FOR DISCUSSION.

IMPLEMENTING DOCUMENTS

10CFR 50.59 EVAL ATTACHED YES NO

EQUIPMENT OPERABILITY JCO ATTACHED YES NO

DISPOSITIONER SIGNATURE/DATE
Larry E Meade 6/29/90

ENVIRONMENTAL QUALIFICATION JCO ATTACHED YES NO

GENERATION ENG CONCURRENCE SIGNATURE/DATE
LARRY HARRIS VIA TELECON 6/29/90 TLM

SUPERVISOR/SHIFT MGR SIGNATURE/DATE
Larry E Meade 6/29/90

QA SIGNATURE/DATE NOTE 2
DAVE KOEHL VIA TELECON 6/29/90 TLM

POC REQUIRED PRIOR TO DECLARING OPERABILITY YES NO

TECHNICAL MGR SIGNATURE/DATE NOTE 1 & 2
RICHARD KOENIGS VIA TELECON 6/29/90 TLM

POC CHAIRMAN SIGNATURE/DATE/MTG NO.
CHRIS FOWERS VIA TELECON 6/29/90 TLM

- NOTES:
- + 1. Technical Mgr. Approval required prior to implementation of the immediate disposition for safety related equipment.
 - + 2. Technical Mgr. and Plant QA Approval required prior to declaring safety related equipment operable.
 - + 3. ANI approval required for ASME conditionally released material with a use-as-is or repair immediate disposition

JUSTIFICATION FOR CONTINUED OPERATION

PER NO. 290-0533

1.0 COMPONENT IDENTIFICATION

The component in question is the Division 2 diesel generator rotor. PER 290-0533 documents the discovery of indications of shorted turns within a pole on the rotor of the generator for DG2. There are eight poles on the rotor which provide field flux required to generate a voltage in the stator of the generator. A rotor pole field coil AC voltage drop test has been performed to determine if shorted turns exist on the rotor for DG2 similar to those found in the Division One diesel generator (PER 290-0499).

The purpose of this JCO is to discuss the units capability to provide adequate emergency power to fulfill the AC Sources Shutdown requirement identified in Plant Technical Specifications 3/4.B.2.

2.0 ACCIDENT CONDITIONS

The accident conditions for which this diesel generator is required to function is a Loss of All Offsite Power. The diesel generator must provide emergency AC power to maintain core shutdown cooling and provide makeup water to the reactor vessel should a Loss of Coolant accident occur.

3.0 COMPONENT SAFETY FUNCTION

This diesel generator is presently serving as the onsite emergency AC source required in Technical Specification 3/4.B.2 for the present operating condition of the Plant. This source of onsite power is required to ensure that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

4.0 STATUS OF COMPONENT

The diesel generator was demonstrated to be operable prior to the special field shorted turn tests by successful completion of a series of integrated surveillance tests. This testing included several fast starts and rapid loading. This testing included an accumulated 38 hour full load run.

The discovery of shorted turns within a field coil on the rotor does not negate the demonstration of the units capability to provide adequate emergency power for the emergency loads. It does raise questions as to the capability of this unit to provide its rated output for an extended period of time under design basis maximum loading.

It is the position of Plant Technical that the unit is Operable and capable of supporting the shutdown operability requirements. This position is based upon the successful completion of the annual integrated testing which the unit has recently successfully passed. This position will be further developed below.

5.0 JUSTIFICATION FOR CONTINUED OPERATION

Existing Condition of the Rotor Field Coils:

It is important to note that the condition found in DG2 is not as progressed or degraded as that found in the rotor for DG1 in Spokane. First two pairs of poles were found degraded in DG1 where only one pair of poles were found degraded in DG2. Secondly, the worst pole degradation in DG1 was much further degraded than that found in DG2.

There is no evidence to indicate, and it is the belief of those individuals involved, that the shorted rotor pole for DG1 was not directly related to the bearing failure. This indicated that the turns had been shorted for some time and that the rotor field was performing its function in the as-found degraded condition. The point of this discussion is that even with further degradation, DG2 would provide emergency power to the Safety Related Loads.

Effects of shorted turns within the rotor of the diesel generator:

- 1) The shorted turns on one field coil will reduce the magnetic flux produced by that pole and hence reduce the output voltage generated in the stator coils. The voltage regulator will increase the field current as necessary to maintain the average generator output voltage. Depending on the quantity of shorted turns, this increased field current will result in an increased load on the excitation system and increased heating in the field coils.
- 2) Shorted turns will cause increased heating within the rotor pole where the shorts exist. This heating will potentially contribute to the acceleration of the degradation. This effect results in a propagation of the failure.
- 3) The reduced flux at the pole with the shorted turns can result in unbalanced forces across the air gap causing vibration.

The field current required to support generator full load from the design curves is approximately 142 amps. The voltage regulator is rated to supply 168 amps. This capability exceeds the required amperage and thus the voltage regulator can provide the additional amperage associated with shorted turns and still assure adequate generator output voltage. The unit presently requires approximately 142 amps at full load which closely matches the design curves. The actual emergency loads are less than the rated load of the diesel generator which provides additional margin in voltage regulator capability.

Local and general area heating is not considered to be significantly greater than normal at this time. This heating effect is directly related to the field current. This current presently matches that expected from the regulator design performance curves. This current is not significantly greater than that anticipated.

Unbalanced rotor flux values can result in increased vibration levels. The vibration levels of the diesel generator is monitored during periodic surveillances and has not been found to be excessive. The vibration levels have been found to be minimal during all previous surveillances. Past vibration levels have been reviewed. This data does not indicate a significantly increasing trend. Future vibration levels will be carefully reviewed to determine if an increasing vibration trend is occurring which can be attributed to accelerated rotor pole coil degradation.

Rotor Pole Coil Degradation:

Shorted rotor coil turns could follow a degradation trend which may eventually lead to failure. There is presently no known data or methodology to support the determination of the duration of time in which reliable operation can be assured or the ability to determine the rate at which this degradation will occur.

Field current data over the last 1 and 1/2 years has been reviewed. No significant increase in field current has been noted as would be expected with a progressively degrading field coil. This tends to indicate a stable condition relative to the rotor poles.

IEEE Standard 432-1976 also indicates that this degradation does not occur rapidly.

"Shorted turns of a minor nature, unlike shorted turns in the stator may not necessarily require immediate re-insulation. Rotors have been known to operate for years with a few random short circuits between successive turns in the rotor winding. However, should subsequent periodic impedance testing show the shorting to be progressive in nature, re-insulation would be necessary to assure reliable operation".

Unit Testing:

It is important to note that the unit has recently undergone and successfully completed a series of integrated tests which demonstrated

the unit operability. This testing is considered to be thorough and challenges the unit. Testing this year included a 110% load run for four hours and an accumulated operating time at rated load of greater than 24 hours.

6.0 CONCLUSION

The above arguments were presented to support the conclusion that the unit has the capability to support the present operability requirements of Technical Specification 3/4.B.2. The unit is considered to be operable and capable of providing emergency AC power during the balance of the outage.

Jerry L. Meade 6/29/90
Originator/Date

RICHARD KOENIGS VIA TELECON 6/29/90 TLM
Manager/Date

POC Mtg. No.

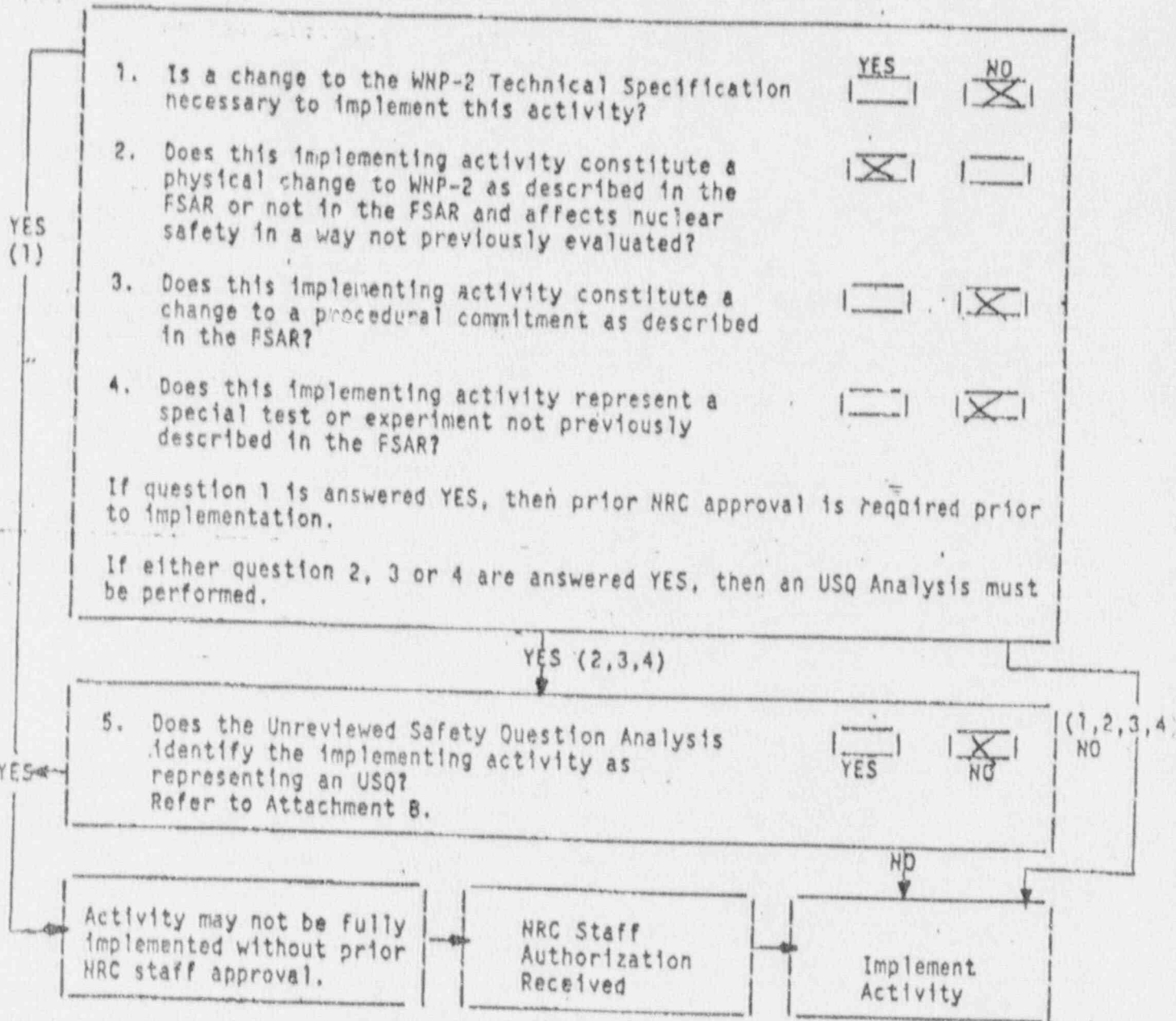
CHRIS FOXGESS VIA TELECON 6/29/90 TLM
POC Chairman/Date

SAFETY RELATED

CONTROLLED COPY

10CFR50.59 EVALUATION PROCESS FLOW CHART

NOTE: The 10CFR50.59 Evaluation implementing processes will typically address items 1 through 4 only and the USQ Analysis would be processed only if required by an affirmative response to question 2, 3, or 4.



NOTE: Upon POC approval, partial implementation may occur without prior NRC staff approval.

Prepared by DT Thonn Date 6-29-90

Approved by Jerry L Meade Date 6-29-90

Attachment A

PROCEDURE NUMBER	REVISION NUMBER	PAGE NUMBER
1.3.43	1	1.3.43-10 of 17

UNREVIEWED SAFETY QUESTION ANALYSIS

TITLE: D02 Generator Rotor Pole Shorted Turns

Implementing Activity Description

This USQ is being prepared to support the POC Immediate Disposition and Justification for Continued Operation generated to support the continued use of the Division Two diesel generator to fulfill the operability requirements of Technical Specification 3/4.8.2.

This USQ has been prepared to discuss the potential loss of the operable diesel generator D02. The attached JCO has taken the position that this diesel generator is in fact operable. The below discussion describes the backup features that are available should this diesel generator become unavailable.

T/S and FSAR References

T/S 3/4.8.2
FSAR 9.5.1

FSAR Sections
Requiring Amendment

None

1. UNREVIEWED SAFETY QUESTION EVALUATION:

- A. Can the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the FSAR be increased?

NO

Justification: The probability of the occurrence of an accident is unchanged by this evolution. The consequences of accident are not increased. The unit is expected to meet its design requirements. Should the Division 2 diesel generator fail, alternate shutdown cooling can be provided by the HPCS pump which is backed by an operable diesel generator. This source of water also provides makeup if it is needed.

Additional contingency has been established to provide an offsite diesel generator upon short notice if this is required. All potential sources of offsite power have been utilized to assure AC power is available.

n Can a possibility for an accident or malfunction of a different type than evaluated previously in the FSAR be created?

NO

Justification: Nothing contained within this evolution has created a different type of accident or malfunction which has not been evaluated in the FSAR. The supporting JCO addresses the capability of DQ2 to support its design function. The potential loss of the diesel generator can be mitigated by the use of the HPCS diesel generator and the HPCS pump.

c Is the margin of safety as defined in the basis for any Technical Specification reduced?

NO

Justification: The basis for the requirement to maintain one operable diesel generator has been addressed in the attached JCO. Alternate shutdown cooling is available. The present decay heat condition of the core is minimal and would require six hours to reach 200 degrees. This allows sufficient time for operator action to provide for alternate shutdown cooling.

Instrumentation and control power is available via the battery supported inverters and will be supported by temporary offsite diesel generators if needed.

NRC Staff Concurrence Required
if any of the above three items is yes.

NO

Prepared by Atkinson Date 6-29-90

Approved by Henry L. Zedler Date 6-29-90

TELEPHONE POC

FOR POC IMMEDIATE DISPOSITION PER 290-0533

APPROVED:

DICK KOENIGS ~ 9:10 PM

CHRIS POWERS

JACK BAKER

LARRY HARROLD

JERRY HARMON

SAM MCKAY

DAVE KOBUS

OTHER ATTENDEES

T. MEADE

D. THONN

S. WILLMAN

J. MASSEY

POC COMMENTS: THIS JCO & USD WERE PREPARED TO DOCUMENT THE CONTINUED USE OF DG2 TO FULFILL THE DG OPERABLE REQUIREMENTS OF T.S. 3/4.8.2 "AC SOURCES - SHUTDOWN," i.e. ONLY MODES 4 & 5.

AS6205

LOSS OF POWER RECOVERY PLAN

- | | | | |
|--------|-----|---|-------|
| 5 min | 1. | Back man out of generator. | _____ |
| 1 min | 2. | Dispatch one man to call security and tell them we are opening the back door to Div. 2 DG Bldg. | _____ |
| 1 min | 3. | Open back door. | _____ |
| 5 min | 4. | Start the welding machine/light generator. | _____ |
| 15 min | 5. | Bring in lights to begin restoration. | _____ |
| 10 min | 6. | Pick up tools . Check tool log. | _____ |
| 5 min | 7. | Remove measuring devices for oil level work. | _____ |
| 2 min | 8. | Verify oil level is between level marks on both glasses. | _____ |
| 5 min | 9. | Remove Bore scope equipment. | _____ |
| 8 min | 10. | Replace 4 pipe plugs at bottom of generator. | _____ |
| 15 min | 11. | Conduct visual inspection for any loose objects. | _____ |
| 15 min | 12. | Replace North outer cover. | _____ |
| 15 min | 13. | Replace SOUTH outer gen. cover. | _____ |
| 1 min | 14. | Remove jacking tool. | _____ |
| 10 min | 15. | Reterminate FIELD power cables in exciter cab. | _____ |
| 5 min | 16. | Close petcocks on engines. | _____ |
| 1 min | 17. | Check thru above steps onetime. | _____ |
| 10 min | 18. | Notify operations to clear clearance: | |
| 2 min | | a. Turn on DC Bkr to field. | |
| 5 min | | b. Rack generator Bkr in. | |
| 2 min | | c. Open air start valves. | |
| 1 min | | d. Ensure 88 relay is reset. | |
| - | | e. MUST BE THE LAST STEP- Place Maint. switch in NORMAL. | |

Observe Diesel start and load to approx. 4.4 Mw.

2 hrs 9 min.

B/13

WNP-2 MAINTENANCE WORK REQUEST

WRS/WO NO.

267430

NORMAL

SHOP

STANDING

WRS NO.

AS 6205

ORIGINATOR

UNIT/EQUIPMENT PIECE NO.

0.2 DG-GEN-1B

INITIATING DOCUMENT

PLA

EQUIPMENT DESCRIPTION/LOCATION

STANDBY AC POWER SYSTEM DIESEL GENERATOR 1B

PROBLEM/WORK REQUESTED

Oil level sightglasses not clearly identified/Available. Verify correct markings & remove all others.

ID TAGS HUNG

YES NO

LOCATIONS

ORIGINATOR (PRINT)

C. HOWARD

VALIDATED BY

6/22/90

CLEARANCE

YES

NO

NUMBER

RWP

YES

NO

NUMBER

TECH SPEC

YES

NO

NUMBER

3.9.1.1

NFRDS

YES

NO

DURATION

2,3,4,5,6,7,8,9,10

DSG

PLANT CONDITION

1,2,3,4,5,6,7,8,9

PRIORITY

1,2,3,4,5,6

SYSTEM

0,2,3

COMPONENT

0,2,3,4,5,6

WORK INSTRUCTION

Howard/Mark

FIRE PROTECTION PERMIT

YES

NO

NUMBER

CONFINED SPACE WORK PLACE PERMIT

YES

NO

NUMBER

SAFETY RELATED

YES

NO

LEAKAGE RELATED

YES

NO

QUALITY CLASS

0,2,3

ASME

YES

NO

WORK INSTRUCTIONS / PROCEDURE NO.

PTL

YES

NO

NUMBER

MAINT #S

MAINT / SYS ENG

See Continuation sheet.

Preliminary In review process

PREPARED BY (PRINT)

Clay Howard

DATE

6-26-90

APPROVAL

DATE

REVIEWED BY (PREPARED BY'S SUPR)

DATE

SHIFT MGR APPROVAL

DATE

QC REQ'D

YES

NO

NAME

QC NOTIFIED

NAME

TIME / DATE / INITIALS

WORK PERFORMED

CRAFTS MAN / SUPR

PARTS / MATERIAL USED?

YES

NO

IF YES, LIST PARTS AND ACCEPT TAG/P.R./P.O. NO.:

B/14

MAINT #S

CONT'D

ID TAGS REMOVED

COMPLETED BY

DATE

REVIEWED BY

DATE

RETEST HOLD

EQUIPMENT OPERABLE - DATE

TIME

BY

SAFETY RELATED

CONTROLLED COPY

CLEARANCE ORDER REQUEST

NOTE: Steps 1-8 to be filled out by requestor, Steps 9 and 10 to be filled out by Maintenance Foreman/Supervisor.

1) Component/System (Be Specific): 02-DG-GEN-DG2

2) Work Document Number: AS 6305

3) Work To Be Done: Verify Sight Glass oil Level MARKS -
GENERATOR POLE Voltage Drop TEST.

4) Job Hazard Analysis Required: Yes _____ No X
(If Yes, attach Job Hazard Analysis, PPM 1.9.12 to this request.)

5) Recommended Boundaries (General): GEN FIELD Flash point (125VDC)
DIESEL ENGINES 2A & 2B, GENERATOR BREAKER
AIR START TEST FOR ENGINES

6) Specific Boundaries/Hazards (N/A if not applicable): ~~DP-51-RE-015~~
B-DG 2
DSA-V-2A1/1, DSA-V-2A1/2, DSA-V-2A2/1, DSA-V-2A2/2

7) Reference Drawings ~~DP-51-RE-015~~

8) Request Initiator/Date Clay HOWARD
Engineer / Foreman / Supervisor

9) Job Scheduled From: Date _____ Time _____ AM/PM
To: Date _____ Time _____ AM/PM

10) Clearance Request Approval: _____ Date _____
Maintenance Foreman/Supervisor

Attachment I

PROCEDURE NUMBER 1.3.8	REVISION NUMBER 13	PAGE NUMBER 1.3.8-48 of 52
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OPERABILITY CHECK SHEET (OCS)

MWR NO A56205

NOTE: If any item below is marked YES, provide requirements in the space provided.

PRE-OPERATIONAL/ACCEPTANCE/SPECIAL TEST REQUIRED: |YES| |NO| TIME/DATE COMPLETED INITIALS

Contact _____ For Test Review and Approval.

Name/Ext

Results Acceptable _____

Name/Date

DYNAMIC MAINTENANCE RETEST |YES| |X|

Contact _____ For Test Review and Approval

Name/Ext

Results Acceptable _____

Name/Date

FIRE RELEASE IMPAIRMENT ITEM |YES| |X|

RELATED MWRs (REQ'D FOR OPERABILITY) |YES| |X|

CONTROL ROOM DOCUMENT UPDATE REQ'D |YES| |X|

CONTACT _____ FOR REQ'D

NAME/EXTENSION

UPDATE PRIOR TO RETURNING EQUIPMENT TO SERVICE

TOP TIER DRAWINGS

DCP CHANGE NUMBER/PAGE DRAWING NO.

PPM CHANGE NUMBER PPM NUMBER

SYSTEM LEAKAGE TEST REQUIRED

(See Attached Visual Exam Data Sheets) |YES| |X|

Results Acceptable _____

Name/Date

SPECIAL OPERATOR TRAINING REQUIRED

PRIOR TO RETURNING EQUIPMENT TO SERVICE |YES| |NO|

NOTE: If yes, enclose information as an attachment.

Performance of this MWR required issuance of

an PER for which the disposition was either |YES| |NO|

|___| use-as-is |___| repair or |___| conditional release

PER NO.

NOTE: If the answer is yes, PER disposition has been approved by Plant

Technical Manager and QA Manager.

Confirmed _____

Shift Manager

Date

Operational Tests Required |YES| |NO| System Operable |YES| |NO|

Test Surveillance No. SHIFT MANAGER TIME/DATE

Performed By: _____ Time/Date _____

Attachment H

PROCEDURE NUMBER 1.3.7	REVISION NUMBER 10	PAGE NUMBER 1.3.7-91 of 96
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SECTION I (SYSTEM/MAINTENANCE ENGINEER)

SECTION II (SHIFT MANAGER)

WORK PACKAGE PLANNING SHEET AND CHECKLIST

MWR NO.	YES	NO	NOTE	REMARKS/COMMENTS/INSTRUCTIONS
1. MWR TYPE (Normal) Shop, Standing	////	////		Completed by POO per PPM 1.16.6
2. Problem Description Accuracy	////	////		Revise if necessary; check DIS/DAT status
3. MWR SUMMARY FILE REVIEW		////		MANDATORY—List # times item worked
4. Safety Related	✓			Query MEL - Fill in on MWR
5. Leakage Related		✓		See PPM 1.5.6 - Fill in on MWR
6. Quality Class	////	////		Query MEL - Circle Class on MWR
7. ASME Repair & Testing of ASME Items		✓		Query MEL - See PPM 1.3.30 - Fill in on MWR
8. PTL				PTL entries are completed by user organizations
Maintenance Procedures/ 9. Data Sheets required			1	List in MWR Work Instructions - Don't attach yet
10. Drawings/Specifications required	✓			List in MWR Work Instructions - Attach copies
11. Environmentally Qualified Item		✓		See PPM 10.1.21 for requirements - List in MWR Instructions
12. Weld Record required		✓		See PPM 10.2.18 for requirements - Obtain and attach
13. ASME Work-Package required		✓		See PPM 1.3.30 - Obtain and attach package
14. NDE required	✓			List in MWR Instructions if not in Weld/ASME Trainers
15. Special Tools required	✓			List in MWR Instructions if not in Maintenance Procedures
16. Special Laydown Area required		✓		List in MWR Instructions
17. Scaffold required		✓	1	See PPM 10.1.53 - Attach Scaffold Request
Temporary Modifications/ 18. Bypasses/Jumpers required		✓		See PPM 1.3.9 and PPM 1.4.1 - List in MWR Instructions
19. NCR/PCR required		✓		See PPM 1.3.12 - Process NCR/PCR - List Number in MWR
Master Data Sheets		✓	1	Are Instrument Master Data Sheets required? If yes, specify on MWR
20. System Leakage Test		✓		If yes, indicate on the OCS and attach visual exam data sheets forms with pertinent data completed (see PPM 3.2.3)
21. Pre-job Walkdown/Inspection required	✓			For workers to understand job scope
22. Materials required		✓	4, 6, 7	List in MWR Instruction <u>WHERE</u> to get materials; Fill out Store Order and/or M.R., attach S.O. Original/M.R. copy to MWR
23. PWR initiated the MWR and Top Tier Drawings or Operations Procedures are affected		✓		Add required statement to OCS <u>AND</u> list drawings/procedures affected on the OCS
24. Troubleshooting involved		✓		See PPM 1.3.42, State in MWR Instructions the Administrative Controls required
25. Defect found	////	////		Add required statement to MWR Instructions for worker to specify defect actually found and "Best Guess" why the problem occurred
26. Retesting required				See PPM 1.5.7 for ideas; list "STATIC" in MWR Instructions; list "DYNAMICS" on OCS

RES:

Obtained by Work Supervisor/Foreman/Engineer just prior to implementing work.
 If parts are substituted, see PPM 1.3.39 for evaluation requirements.
 If chemicals are used, refer to PPM 1.9.1 regarding hazards. Provide precautionary instructions in the MWR.
 Provide disposal instructions in the MWR for all chemical waste generated.
 Refer to Step 21 on Page 66 for safety related part/materials.

PROCEDURE NUMBER	REVISION NUMBER	PAGE NUMBER
1.3.7	10	1.3.7-74 of 86

SAFETY RELATED

CONTROLLED COPY

WORK PACKAGE PLANNING SHEET AND CHECKLIST

MWR NO.	YES	NO	NOTE	REMARKS/COMMENTS/INSTRUCTIONS
28.		✓	8	See PPM 10.2.5 for PMT V1, V2 or V3 Forms
29.		✓		Specify in MWR Instructions, attach appropriate PPM 8.7.2, 8.7.5, 8.7.6, 8.7.7 with pertinent data completed.
		////		MANDATORY - List PM and EQM due in next 5 months:
30.		////		
				If impaired, then the <u>FIRST</u> step in MWR is to tell SSS or Security of impairment prior to START work; also write a step to close the impairment
31.		✓	9	
-----TAGGING/PERMITS/SAFETY-----				
32.	✓		3,5	See PPM 1.3.8; prepare, attach recommendations
33.		✓	3	See PPM 1.3.35; prepare and attach permit
34.		✓	3	See PPM 1.3.35; prepare and attach permit
				Fire Protection Systems
35.		✓	3	See PPM 1.3.35; prepare and attach permit
36.		✓	3	See PPM 1.9.2; prepare and attach permit
37.	✓			List in MWR Work Instructions
38.				See PPM 1.9.12 - Job Hazard Analysis
39.		✓		See PPM 1.11.3 - Initiate ALARA Scope SN/RWP, attach cc to MWR
-----HELP FROM OTHERS-----				
	✓	////	2	-----LIST EST NO & DURATION HERE & ON MWR PINK-----
	✓			Mechanics 2 men 4 hrs
		✓		T&C
	✓			Electricians 7 men 16 hrs
				Laborers
		✓		Site Support Contract
				Operations
		✓		HP/Chemistry
		✓		Security
	✓			NDE & T 2 men 2 hrs
				Technical Staff/Design
		✓		Vendor Representative (List)
				Other (List)
41.		✓		If yes, attach to OCS or verify conduct by Technical Training.

NOTES:

- List duration in hours, unless otherwise specified.
- Completion of processing done by Supervisor/Foreman just prior to implementing work.
- If CD requires lifted leads, prepare and attach 10CFR50.59 review in accordance with PPM 1.3.9, Lifted Leads and Jumpers.
- Consult Vibration Engineer for Extant of Vibration Monitoring, Testing, or Troubleshooting required before completing Work Instructions.
- Security shall be notified prior to any work activity when opening holes through walls, ceilings, doors, etc., is required by the MWR.

Attachment 3
Page 2 of 10

PROCEDURE NUMBER	REVISION NUMBER	PAGE NUMBER
1.3.7	10	1.3.7-75 of 96

**OVERSIZE
DOCUMENT
PAGE PULLED**

SEE APERTURE CARDS

NUMBER OF OVERSIZE PAGES FILMED ON APERTURE CARDS

2

**APERTURE CARD/HARD COPY AVAILABLE FROM
RECORDS AND REPORTS MANAGEMENT BRANCH**



RECEIVED

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
REGISTRATION

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352
1990 JUN 26 PM 1:24

June 26, 1990
G02-90-112
Docket No. 50-397

JD Partlow, Associate Director for Projects
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: NUCLEAR PLANT NO. 2, OPERATING LICENSE NPF-21
REQUEST FOR WAIVER OF COMPLIANCE RELATIVE TO
TECHNICAL SPECIFICATION 3.8.1.2, A.C. SOURCES
- SHUTDOWN

Reference: Licensee Event Report 90-012, "Fire in Division One Emergency Diesel
Generator Caused by Generator Thrust Bearing Failure", dated June 25,
1990.

Action a. of the subject technical specification states that when less than the
required A.C. power sources are available immediate corrective action shall be
taken to restore a required power source to operable status as soon as practical.
This letter requests a waiver of compliance from this requirement.

The requirements for which this waiver is requested and the circumstances
surrounding the immediate situation are as follows:

As reported in the reference, on May 27, 1990 WNP-2 experienced a failure of the
Division 1 generator slip ring end bearing approximately six hours into a 24 hour
full load run. This bearing failure has been identified to have resulted from
axial thrust applied from the opposite end of the generator as the thrust bearing
at that end failed. Root causes for the thrust bearing failure relate to, among
other issues, lack of or loss of oil from the bearing reservoir and the very
narrow oil level operating band for this bearing.

The Division 1 generator has been removed from the plant and sent offsite for
repair. While offsite, missing stator turn blocking and minor winding end turn
displacement were found and electrical testing of the rotor showed shorted turns
on two rotor poles. From preliminary evaluation, it is not believed that these
generator problems were caused by the bearing failures. The decision has been
made to rewind all of the Division 1 generator rotor poles. That process is
currently ongoing.

~~5007030217~~

5 ps.

B/4

It is expected that the generator will be onsite by July 3 with installation and testing completed by July 8.

The Supply System has evaluated what actions should be taken relative to the Division 2 generator which is of similar design. Regarding the lack of or loss of bearing oil, it is known that one of the major root causes of Division 1 failure does not exist on the Division 2 generator. This is discussed in the referenced LER. However, there are other considerations regarding the oil inventory that must be evaluated for the Division 2 generator. Also, the issue of the shorted rotor turns and stator blocking and minor winding end turn displacement should be considered for the Division 2 generator. In-place electrical testing of the generator rotor and visual inspection of the stator would be of value in addressing these issues.

The Supply System believes that it would be desirable to take the following three actions on the Division 2 generator prior to restart:

- Confirm by field measurements that the marking on the oil level sight glass is correct. The operating band for this level is only 3/8 inch. This activity will take about eight hours to complete and only require about ten minutes to restore the diesel to operable status should that be necessary. The activity would involve removal of a coupling guard and a measurement from the shaft to the sight glass.
- Perform an in place pole-drop-voltage test per IEEE 115 on the rotor windings. This activity would take about sixteen hours and would require about two hours to restore the diesel to operable status should that be necessary. This activity would involve gaining access to the slip ring and winding pole connections and manual rotation of the diesel.
- Perform a visual inspection by boroscope of the stator physical condition. This would be performed while access is available to the generator internals.

On June 27 we will be required to perform a surveillance run on the Division 2 diesel generator. Performing the above action of confirming that the required level is correctly marked prior to this surveillance would eliminate a commercial risk to the Supply System.

Performing the pole-drop-voltage tests and visual inspections at the same time as verifying bearing oil level indication, rather than waiting for the return of the Division 1 generator and establishing its operability are also of benefit. They will allow the Supply System to assess the impact of any negative findings in a more timely manner.

Performing these three Division 2 activities on the proposed schedule (i.e., with Division 1 out of service) is not consistent with the above mentioned technical specification action statement that requires power sources be restored as soon as practical. However, by completing these activities as proposed, we will complete those corrective actions required to confirm and achieve operability of both diesels on an earlier schedule.

Page Three
REQUEST FOR WAIVER OF COMPLIANCE RELATIVE
TO TECH SPEC 3.8.1.2, A.C. SOURCES - SHUTDOWN

The request for this waiver could not have been avoided as the bearing failure occurred during the current outage and the draft root cause analyses has only recently been completed. That analysis identified the narrow oil level operating band as one potential cause of the bearing failure. The shorted turns were not found until the bearing repair activity was near completion. The electrical test was performed as a routine activity prior to generator assembly to confirm that no damage occurred during the repair activity.

We believe that the safety significance and potential consequences of performing the above two tasks while the Division 1 diesel is out of service are acceptable in view of the following:

- WNP-2 will have been shutdown for 68 days and approximately 28 percent of the core is fuel that makes a negligible contribution to decay heat. As such, the decay heat level is very low. Should a loss of offsite power occur and the full two hours mentioned above be required to restore the Division 2 diesel or an offsite power source, the reactor coolant temperature would only increase from the current temperature of 135 to 159 degrees F. A temperature of up to 200 degrees F would be acceptable for this condition.
- Under these conditions, the spent fuel pool temperature would increase from 90 to 92 degrees F. A temperature of at least 125 F would be acceptable.
- The reactor coolant pressure boundary status is that the reactor pressure vessel head is on and tensioned.
- High Pressure Core Spray with its diesel will be available for ECCS and alternate shutdown cooling. This would provide adequate decay heat removal for more than a day.
- The reliability of the Bonneville Power Association (BPA) grid has been evaluated to be very high. This is particularly true at this time in that Pacific Northwest is operating with an energy surplus.

During the performance of the above discussed activities, should the waiver be granted, we would take the following compensatory actions:

- Maintenance activities and surveillance on the plant A.C. electrical systems will be carefully controlled so as to reduce the risk of any plant centered loss of offsite power.
- No core alterations, handling of irradiated fuel, crane operation over the spent fuel pool, or activities that could potentially drain the vessel will be performed while the Division 2 diesel is inoperable.

- Secondary Containment will be maintained.
- The planned work and "back out" activities will be prestaged to the extent practical to keep the out-of-service time to a minimum and to allow for rapid recovery to an operable status should that be necessary.
- These activities will be performed under an approved trouble-shooting plan.
- We will communicate to the Bonneville Power Administration the need to control any maintenance activities on those portions of the 500, 230 and 115 kV systems that if failed would have high risk of causing a loss of that supply to WNP-2.
- Prior to initiating this activity we will contact the weather service for any forecast of thunderstorm or other severe weather.
- The plant electrical distribution system will be lined up with offsite power supplied from the 500 kV source. This will allow automatic sequential transfer to the 230 and 115 kV sources upon loss of the 500 kV source.
- During the performance of either of the three activities, should any of the offsite sources be lost for more than a few seconds we will back out of the activity (e.g., restore Division 2 operability as soon as practical). We will not resume the activity until the reliability of that source has been established.

The Supply System concludes that the proposed activity does not involve a significant hazards consideration for the following reasons:

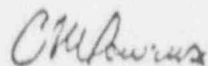
- It would not involve a significant increase in the probability or consequences of an accident. In the very unlikely case of a loss of shutdown cooling for two hours the resulting reactor coolant temperature increase would not challenge the fuel cladding or any of the other fission product boundaries. Likewise the increase in spent fuel pool temperature would be acceptable.

Page Five
REQUEST FOR WAIVER OF COMPLIANCE RELATIVE
TO TECH SPEC 3.8.1.2, A.C. SOURCES - SHUTDOWN

- It would not create the possibility of a new or different kind of accident. With the current plant status, the only significant accident considerations are losses of shutdown and spent fuel pool cooling, both of which are previously evaluated events.
- It would not create a significant decrease in a margin of safety as the temperature increases that would accompany a loss of shutdown cooling and spent fuel cooling do not challenge previously established margins.

The issuance of the requested waiver would have no environmental consequences even should the postulated loss of shutdown cooling and spent fuel cooling events occur. This request has been approved by the WNP-2 Plant Operations Committee.

Very truly yours,



C.M. Powers
Plant Manager, WNP-2

AGH/slr

Attachments

cc: JB Martin - NRC RV
NS Reynolds - BCP&R
RB Samworth - NRC
DL Williams - BPA/399
NRC Site Inspector - 901A
Document Control Desk
C Eschels - EFSEC